



CLARK COUNTY BUILDING DEPARTMENT

Wind Generators

Building Permit Guide



Part I. General Information

This guide is intended to ensure an electrically and structurally safe installation of wind generator systems whether interactive or stand alone. Outlined within this guide are the minimum plans submittal requirements to obtain permits for stand alone or utility interactive wind generator installations that produce electricity of any voltage to buildings and structures, whether occupiable or not, and to any type of equipment including but not limited to pumps, fences, cellular communications equipment and the charging of batteries. The requirements of this guide also apply to large scale wind 'farms' not located on utility company property which are intended to generate high voltage and/or high amperages that are interactive and capable of direct feeding to a utility power grid.

Definitions:

For the purpose of this guide, the following definitions are used:

Alternating Current (ac): Electric current that reverses direction periodically, usually 60 cycles per second for residential and commercial applications.

Authority Having Jurisdiction (AHJ): An organization, office or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation or a procedure.

Direct Current (dc): Electric current that flows in one direction.

Hybrid System: A system comprised of multiple power sources. These power sources may include photovoltaic, wind, micro-hydro generators, engine-driven generators and others, but do not include electrical production and distribution network systems. Energy storage systems, such as batteries, do not constitute a power source for the purpose of this definition.

Interactive System: A wind generator system that operates in parallel with and may deliver power to an electrical production and distribution network. For the purpose of this definition, an energy storage subsystem of a wind generator, such as a battery, is not another electrical production source.

Inverter: Equipment that is used to change voltage level or waveform, or both, of electrical energy. Commonly, an inverter [also known as a power conditioning unit (PCU) or power conversion system (PCS)] is a device that changes dc input to an ac output. Inverters may also function as battery chargers that use alternating current from another source and convert it into direct current for charging batteries.

Listed: Equipment, materials or services included in a list published by an organization that is acceptable to the authority having jurisdiction and concerned with evaluation of products or services, that maintains periodic inspection of production of listed equipment or materials or periodic evaluation of services, and whose listing states that either the equipment, material or service meets appropriate designated standards or has been tested and found suitable for a specific purpose.

Stand-Alone System: A wind generator system that supplies electrical power independently of an electrical production and distribution network.

Storage Battery: A battery comprised of one or more re-chargeable cells of the lead-acid, nickel-cadmium or other electro-mechanical types.

Utility Interactive Output Circuit: The conductors between the utility interactive inverter and the service equipment or another electric power production source, such as a utility, for electrical production and distribution network.

Utility Interactive Over-current Device: The final breaker/fuse that is installed where the utility interactive conductors connect to the service equipment.

Wind generator: A rotary device that extracts energy from the wind and converts it to electricity. Also known as a wind turbine, wind turbine generator, wind power unit, wind energy converter or aero generator.

Part II. Applicant's Responsibility

Applicants are responsible for submitting a completed permit application form with two sets of plans containing electrical, structural and site information to demonstrate compliance with the appropriate codes and ordinances. For single-family residential installations, a homeowner may utilize a residential building permit application and a residential electrical permit application for the work. For commercial installations, a commercial electrical sub-permit application will be required and the plans must be prepared and signed by an electrical contractor or electrical engineer licensed in the state of Nevada.

Part III. Prerequisites

For wind generator systems exceeding 600 volts ac or dc, or for systems exceeding 800 amperes of production capability, the electrical plans must be prepared by an electrical engineer licensed in the state of Nevada. Similarly, the structural design aspects will need to be prepared by a structural engineer licensed in the state of Nevada.

Residential wind generator projects are submitted under a residential building permit application and a residential electrical permit application. Commercial projects are submitted under a commercial electrical sub permit application. Current Planning and Zoning approval are required prior to review by Plans Examination. Due to the extent of the structural reviews, wind generator plans are not reviewed over the counter by Plans Examination and therefore must be logged in.

Part IV. Applicable Codes

Currently adopted version of the following:

- Clark County Building Administrative Code
- National Electrical Code
- Southern Nevada Amendments to the National Electrical Code
- International Building Code
- Southern Nevada Amendments to the International Building Code
- Title 30, Unified Development Code

Part V. Submittal Package

The submittal package shall consist of appropriately filled out permit application(s) with an assigned permit application number, two (2) sets of completed and signed plans by the homeowner or applicable design professional for commercial projects, a completed contact information sheet, and a signed contract identifying the negotiated contract cost.

Part VI. Plan Contents

The following list constitutes the minimum plans submittal requirements for Solar PV systems:

- Provide a site plan showing where the wind generator will be installed.
- Provide a site plan/floor plan showing the locations of the service and disconnect.
- Provide structural calculations signed and stamped by a civil or structural engineer licensed in the state of Nevada.
- Specify all conductor sizes from the wind generator to the service tie-in point (line-side tap or panel bus).
- Specify conductor type (MC, THHW etc).
- Specify conductor temperature rating (75/90 degrees C).
- Specify conduit size and type where applicable (PVC, EMT, RGS).
- Show all over-current protection devices and sizes and where they occur.
- Identify the size and location (end of bus or center of bus) of the main breaker and back-fed breaker for utility interactive systems.
- Identify the bus rating of the service/distribution board/panel where the back-fed breaker is installed.
- Provide a single-line diagram of the wind generator system to be installed (items 4 through 10 can be shown here).
- Identifying voltage(s) and worst case current load(s) on feeder(s).
- Provide the manufacturer cut sheet for the wind generator to include evidence of listing.
- Provide the manufacturer cut sheet on the Inverter system with evidence of listing to include UL 1741 for utility interactive systems (this listing may be included with the wind generator listing)

Part VII. Other Information

For systems with Storage Batteries, the following additional information is required:

- The location and configuration of battery storage must be shown on a site plan/floor plan.
- Show how hydrogen gas ventilation is achieved for lead acid and similar type batteries.
- Battery installation must comply with Article 480 of the NEC

Clark County Building Department Locations & Services

MAIN OFFICE 4701 W. Russell Road Las Vegas, NV 89118 (702)455-3000	On-Site Plan Submittals All "Walk-Through" Plan Review / Permitting Functions Residential Tract Submittal / Permitting All Sub-Trade (Electrical, Plumbing & Mechanical) Permitting Building Inspection Scheduling Functions Records	Temporary Certificate of Occupancy Submittals Building Inspections Building Inspector Inquiries Amusement / Transportation Systems Operation Certificates Approved Fabricators Quality Assurance Agency Listing
LAUGHLIN OFFICE Regional Government Center 101 Civic Way Laughlin, NV 89029 (702)298-2436	Building Inspection Services	
OVERTON OFFICE 320 North Moapa Valley Blvd. Overton, NV 89040 (702)397-8089	Building Inspection Services	

Automated Phone System (702) 455-3000

- Option 1:** For all Inspection services or to report a building code violation.
Option 2: For information regarding on-site permits or new plan submittals.
Option 3: For the Building Plans Examination division or QAA information.
Option 4: For the Zoning Plans Examination division.
Option 5: For information or copies regarding land development, construction documents, plans or permits.
Option 6: To speak with Management staff.
Option #: For hours of operation, Office location and website information.

Other Clark County Departments/Divisions/Districts

Air Quality & Environmental Management	500 S. Grand Central Parkway, Las Vegas NV	(702) 455-5942
Public Works, Development Review Services	500 S. Grand Central Parkway, Las Vegas NV	(702) 455-6000
Comprehensive Planning	500 S. Grand Central Parkway, Las Vegas NV	(702) 455-4314
Fire Department	575 E. Flamingo Road, Las Vegas NV	(702) 455-7316
Las Vegas Valley Water District	1001 S. Valley View Boulevard, Las Vegas NV	(702) 870-2011
Southern Nevada Health District	625 Shadow Lane, Las Vegas NV	(702) 759-1000
Water Reclamation District	5857 E. Flamingo Road, Las Vegas NV	(702) 668-8888

State of Nevada

Division of Water Resources	400 Shadow Lane, Suite 201, Las Vegas NV	(702) 486-2770
Nevada State Contractors Board	2310 Corporate Circle, Suite 200, Henderson NV	(702) 486-1100

Utilities

Nevada Power	6226 W. Sahara Avenue, Las Vegas NV	(702) 402-5555
Southwest Gas	5241 Spring Mountain Road, Las Vegas NV	(877) 860-6020

www.clarkcountynv.gov/depts/development_services